Original Research Article

Analysis of indication of caesarean sections according to Robson's ten group classification system at a tertiary care teaching hospital in South Rajasthan

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ABSTRACT

Background: The objective of this study was categorization and evaluation of the caesarean section rate at our institute as per Robson's formula.
Methods: This retrospective study was conducted at department of obstetrics and gynecology, RNT Medical college, Udaipur, a tertiary care teaching hospital in South Rajasthan. The data was collected retrospectively from December 2020 to February 2020 over a period of 2 months and percentage were calculated in various groups as per Robson's ten group classification system.
Results: Among a total of 1195 women delivered during study period, 420 (35.14%) delivered by CS. Women with previous CS (group 5) contributed maximum (35.95%) to the total number of CS followed by group 2 (27.14%).
Conclusions: Standardization of indication of caesarean deliveries, regular audits and definite protocol in hospitals will aid in curbing the rate of caesarean deliveries in hospitals.

Keywords: Caesarean section, Robson's classification

INTRODUCTION

Caesarean section (CS) is the most commonly performed major surgery in obstetrics all over world. High caesarean birth rates are an issue of international public health concern, because as per WHO caesarean section rates above 15% are not associated with any additional reduction in maternal and neonatal mortality and morbidity rather than it has its own surgery related complication in present as well in subsequent pregnancy.[1,2]

For this an appropriate classification to identify the groups of women undergoing CS and investigation of the underlying reasons for trends is essential so that appropriate effective measures to reduce CS rates can be implemented.

A systematic review of classifications for caesarean section in 2011 suggested that Robson's classification in particular is best for auditing, analyzing and comparing CS rates across different settings and this helps to create and implement effective strategies specifically targeted to optimize CS rates wherever necessary.[3] This classification has been appreciated by WHO in 2015 and FIGO in 2016.

The Robson ten-group classification system allows analysis of CS rates according to following characteristics of pregnancy.[4]

i) Single or multiple pregnancy. ii) Nulliparous, multiparous, or multiparous with a previous CS. iii) Cephalic, breech presentation or other malpresentation. iv) Spontaneous or induced labour. v) Term or preterm births.

Table 1: Robson's ten group classification of caesarean section.

Groups	Clinical characteristics
1	Nulliparous, single cephalic, >37 weeks in spontaneous labour
2	Nulliparous, single cephalic, >37 weeks, induced or CS before labour
3	Multiparous (excluding previous CS), single cephalic, >37 weeks in spontaneous labour
4	Multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labour
5	Previous CS, single cephalic, >37 weeks
6	All nulliparous breeches
7	All multiparous breeches (including previous CS)
8	All multiple pregnancies (including previous CS)
9	All abnormal lies (including previous CS)
10	All single cephalic, <36 weeks (including previous CS)

Aims and objective

Categorization and evaluation of caesarean rates in our institute as per Robson's formula.

METHODS

This retrospective study was conducted at department of Obstetrics and Gynecology, Ravindra Nath Tagore Medical College, Udaipur, a tertiary care teaching hospital in South Rajasthan, India. The study was conducted after taking approval from institutional ethical committee. Retrospective analysis of total 1195 women delivered from December 2020 to February 2020 over a duration of 2 months done and were included in the study.

Exclusion criteria

Laparotomy for uterine rupture were excluded.

Data collection and analysis

The data was collected from the records available in the hospital. All the data collected was analyzed using simple statistics measures like percentage and proportion. Descriptive statistical analysis was done. The women delivered by CS proportions in various groups according to Robson's ten group classification were calculated.

RESULTS

A total of 1195 women delivered during the study period, out of which 35.14% i.e. 420 were delivered by caesarean section.

Table 2: Relative size of each group according to Robson's ten-groups classification system.

Groups	Clinical characteristics	Relative size of each group	
		N	%
1	Nulliparous, single cephalic, >37 weeks in spontaneous labour	279	23.3
2	Nulliparous, single cephalic, >37 weeks, induced or CS before labour	211	17.65
3	Multiparous (excluding previous CS), single cephalic, >37 weeks in spontaneous labour	276	23.09
4	Multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labour	128	10.71
5	Previous CS, single cephalic, >37 weeks	168	14.05
6	All nulliparous breeches	37	3.09
7	All multiparous breeches (including previous CS)	9	0.75
8	All multiple pregnancies (including previous CS)	16	1.33
9	All abnormal lies (including previous CS)	8	0.66
10	All single cephalic, <36 weeks (including previous CS)	63	5.27
Total		1195	100.0

Among them, according to Robson's 10-groups classification system, most of the women 279 (23.4%) were in group 1 followed by 276 (23.09%) women in group 3. In group 2 and 4 there were 211 (17.65%) and 128 (10.71%) women respectively whereas group 5 was constituted by 168 (14.05%) women with previous LSCS.

Of all the women with breech presentations 37 (3.09%) were in group 6 that is nulliparous and 9 (0.75%) women were multiparous (group 7). There were 16 (1.33%) women with multiple pregnancy (group 8). The smallest group was group 9, with only 8 (0.66%) women having abnormal lies. Group 10 included 63 (5.27%) women (Table 2).

The Table 3 shows the CS rate in each individual group which was maximum in group-9 (all abnormal lies, including previous CS) i.e.100%, followed by group-5 (Previous CS, single cephalic, >37 weeks) i.e. 89.88% and group-6 (all nulliparous breech) i.e.81.08%.

The group-5 (previous CS, single cephalic, >37 weeks) was the maximum contributor to the overall CS rate as per Robson classification i.e. 35.95% followed by group-2 (nulliparous, single cephalic, >37 weeks, induced or CS

before labour i.e.27.14% and group-4 (multiparous, excluding previous CS, single cephalic, induced or CS before labour) i.e. 9.04% patients.

Table 3: CS rates among women groups according to Robson's ten-group classification system.

Group	Robson's ten-groups classification	Number of women in group	Number and CS rate in each group (%)	(%) Contribution made by each group to the overall CS as per Robson (n=420)
1	Nulliparous, single cephalic, >37 weeks in spontaneous labour	276	35 (12.5%)	8.33
2	Nulliparous, single cephalic, >37 weeks, induced or CS before labour	211	114 (54.25%)	27.14
3	Multiparous (excluding previous CS), single cephalic, >37 weeks in spontaneous labour	276	10 (3.62%)	2.38
4	Multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labour	128	38 (29.68%)	9.04
5	Previous CS, single cephalic, >37 weeks	168	151 (89.88%)	35.95
6	All nulliparous breeches	37	30 (81.08%)	7.14
7	All multiparous breeches (including previous CS)	09	06 (66.66%)	1.42
8	All multiple pregnancies (including previous CS)	16	10 (62.5%)	2.38
9	All abnormal lies (including previous CS)	8	08 (100%)	1.90
10	All single cephalic, <36 weeks (including previous CS)	63	18 (28.5%)	4.28
Total		1195	420	100

DISCUSSION

In our study the overall CS rate was 35.14%. Similar high rates were observed in study by Patel et al around 40% and 25.7% by Katke et al from various hospitals in India.[5,6] we observed that group 5 (women with previous CS) made the highest contribution of 35.95% to overall CS rate. Our results are resembling with a study done by Wanjari in Maharashtra in which repeat CS accounted for 32.8% of all CS.[7] Similar results were also obtained by Shirsath et al (54.5%) and Kansara et al (46.1%).[8,9] The second most contributor was the group II (Nulliparous, single cephalic induced/CS before labour) with 27.14% CS rate. The maximum contributors of caesareans in this study were by groups V, II and I in that order. This was similar to the observation made in most of the studies across India. Women with a history of previous caesarean at term with cephalic babies (group V) and primiparous mothers, cephalic presentation and >37 weeks gestation (group I, II) were identified as a priority for three specific goals. First was the goal of achieving maximum natural births as it is a physiological event, second to avoid the first caesarean for better future obstetric implications and third to motivate more number of TOLACs (Trial of labour after caesareans).[10]

A study in Australia similarly noted highest rates of caesareans in Group V (previous caesarean with term cephalic babies) followed by I (primiparous mothers in spontaneous labour). The overall caesarean rate in the study was 23.5%. Women with previous caesarean (Group V) accounted for almost 46.3% of the total caesareans compared to 35.95% in the present study. Women, beyond 37 weeks with cephalic presentation in spontaneous labour onset and women having previous caesareans (Groups I, III, V) were the primary contributors of caesareans in African countries, with a variation in the orders. The common indications were APH and obstructed labour.[11] Inductions were low in many low income settings due to inadequate caesarean facilities.[12] In contrast, hospitals catering to high income groups had more caesareans in Group V (women with previous caesareans).[13,14] Most studies show that Group V is a major contributor in both low resource and high resource settings.[15] This emphasizes the importance of preventing primary caesareans. A study in a community centre in India has examined caesareans over a decade. In it 10093 caesareans were analysed and all deliveries were grouped under the Robson's TGCS. The largest contributor to total caesareans was I, V and III (37.62%, 17.06% and 15%). This high numbers of group V and less number of II can be explained by the fact that the community centres usually cater to low risk women and have few inductions and TOLACs as in India referrals are more common in case of high risk mothers, meconium stained liquor. A lot of focus needs to be given in managing labour ward protocols at an institutional level keeping in mind the available manpower and technical

resources. All meconium stained liquors or all non-reassuring foetal heart patterns do not necessarily need a caesarean. At the same time delay may increase neonatal mortality and morbidity especially if skilled and adequate monitoring facilities are not available. Repeated training of residents on labour management and CTG interpretation needs to be done along with sensitization of all staff to reinforce normal delivery in patients. Foetal scalp blood sampling may help in decision making in cases of suspicious CTGs, though its availability is scarce. Foetal scalp stimulation may be used instead.[16] Use of infusion pumps help in correct titration of oxytocin dose and avoids hyper stimulation. Patients need to be sensitized about the advantages of normal deliveries, need for antenatal exercises and the need to avoid inductions unless indicated.

Women with previous caesareans accounted for almost a third (35.95%) of all caesareans. The most common indication in women with previous caesarean was refusal of TOLAC. These women and their families need to be educated about the success of TOLAC in selected cases.

Caesareans done for breech presentation can be reduced by training residents in the art of breech delivery and external cephalic versions in the antenatal period. A reasonable attempt of vaginal delivery can be given to late preterm breech as well.

The mode of delivery should be discussed antenatally in the third trimester. As spontaneous onset of labour is the best predictor of success of TOLAC, selected women may be convinced for TOLAC in case of spontaneous onset of labour and to wait till 41 weeks before termination. A careful supervision in both antepartum, intrapartum and postpartum periods and availability of adequate CTG monitoring are very important in women of Group V.

Caesareans accounted for 7.14% and 1.42% of the total caesareans done in primiparous and multiparous breech (groups VI and VII) respectively. While most obstetricians have a guarded attitude regarding vaginal delivery in primiparous breech, a trial can be given in selected cases of multiparous women.

Caesareans done for breech presentation can be reduced by training residents in the art of breech delivery and external cephalic versions in the antenatal period. A reasonable attempt of vaginal delivery can be given to late preterm breech as well.

Multiple studies have shown that labour inductions directly increase the likelihood of caesarean deliveries. In the present study, 27.14% of the caesareans were those with inductions or caesarean before labour. The most common indication of caesarean in this group was failure of induction. This highlights the importance of weighing the risk of continuation of pregnancy versus the risk of caesarean in case of induction. In order to reduce

caesareans in this class it is more important to review the indications of inductions rather than indications of caesareans alone.

Classification under the Robson's TGCS is the first step on the path to reduce caesarean rates. It is only through periodic analysis using the classification that relevant group specific measures can be introduced and after the changes are implemented, subsequent audit should analyse the impact. The major pitfall of Robson's TGCS is that it does not take into account the neonatal morbidity or any maternal high risk factors like a history of infertility, recurrent pregnancy losses or medical disorders like preeclampsia, GDM and others. Thus analysis of the caesareans need to go beyond the numbers and take into account the additional maternal and neonatal morbidity. In this era of informed decision taking by the patient, the concept of caesarean on demand comes in a grey zone. A system where a second opinion or a second counselling by another obstetrician is available within the department has been found to reduce caesareans on demand and motivating women for TOLAC.[17]

CONCLUSION

All caesareans deliveries should be universally categorized by the Robson's TGCS. Groups contributing most to caesareans should be analysed regularly and interventions initiated. Group 5 (previous caesarean, single cephalic, >37 weeks) and group 2 (Nulliparous, single cephalic, induced or CS before labour) were the maximum contributor. So interventions should be targeted at reducing primary caesareans and convincing patients for TOLAC where possible. Institutional protocols for defining situations like foetal distress, non-progress of labour and failed induction should be available. Inductions should be done only when necessary. A regular audit should be done in all institutions to rationalize caesarean rates. Impact of interventions to reduce caesarean rates should be studied and documented.

REFERENCES

1. World Health Organization. Appropriate technology for birth. Lancet. 1985;326(8452):436-7.
2. Aithabe F, Belizan JM. Caesarean section: the paradox (comment). Lancet. 2006;368(9546):1472-3.
3. Torloni MR, Betran AP, Souza JP, Widmer M, Allen T, Gulmezoglu M, et al. Classifications for cesarean section: a systematic review. PloS one. 2011;6(1):e14566.
4. Robson MS. Caesarean sections. Fetal Matern Med Rev. 2001;12(1):23-39.

5. Patel RV, Gosalia EV, KJ, Vasa PB, Pandya VM. Indication and trends of caesarean birth delivery in current practice scenario. Int J Reprod Contracept Obstet Gynecol. 2014;3(5):75-80.

6. Katke RD, Zarariya AN, Deai PV. LSCS audit in a tertiary care centre in Mumbai; to study indications and risk factors in LSCS and its effect on early perinatal morbidity and mortality rate. Int J Reprod Contracept Obstet Gynecol. 2014;3:963-8.

7. Wanjari SA. Rising caesarean section rates: a matter of concern? Int J Reprod Contracept Obstet Gynecol. 2014;3:728-31.

8. Kansara V, Patel S, Aanand N, Muchhadia J, Kegathra B, Patel R. A recent way of evaluation of caesarean birth rate by Robson's 10 group system. J Med Pharmaceut Allied Sci. 2014;01:62-70.

9. Shirsath A, Risbud N. Analysis of caesarean section rates according to Robson's 10 group classification system at a tertiary care hospital. Int J Sci Res. 2014;3(1):401-2.

10. Bolognani CV, Reis LB, Dias A, Calderon ID. Robson 10-groups classification system to access C-section in two public hospitals of the Federal District/Brazil. PloS One. 2018;13(2):e0192997.

11. Littorp H, Kidanto HL, Nystrom L. increasing caesarean section rates among low risk groups: a panel study classifying deliveries according to Robson at a university hospital in Tanzania. BMC Pregnanc Childbirth. 2013;13:2393.

12. Tura AK, Pijpers O, Man MD. Analysis of caesarean sections using Robson 10-group classification system in a university hospital in eastern Ethiopia: a cross sectional study. BMJ Open. 2018;8:1773-7.

13. Kelly S, Sprague A, Fell DB. Examining caesarean sections in Canada using the Robson classification system. J Obstet Gynaecol Can. 2013;35:206-14.

14. Roberg S, Dube E, Blouin S. Reporting caesarean delivery in Quebec using the Robson classification system. J Obstet Gynaecol Can. 2017;39:152-6.

15. Vogel JP, Betran AP, Vindevoghel N. Use of Robson classification to assess caesarean section rates in 21 countries: a secondary analysis of two WHO multicountry surveys. Lancet Glob Health. 2015;3(5):260-70.

16. Elimian A, Figueroa R, Teani N. Intraparteum assessment of fetal wellbeing: a comparison of scalp stimulation with scalp blood pH sampling. Obstet Gynecol. 1997;89(3):373-6.

17. Wingert A, Johnsonc C, Featherstone R, Sebastianski M, Hartling, Wilson RD. Adjunct clinical interventions that influence vaginal birth after caesarean rates: a systematic review. BMC Pregnanc Childbirth. 2018;18(1):452.

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